

REMARKS

Claims 1-17 are pending in the present Application. No claims have been canceled, Claim 1 has been amended, no claims have been added, and Claims 14-17 remain withdrawn, leaving Claims 1-13 for consideration upon entry of the present Amendment.

Amendments to Claims

Claim 1 has been amended to recite that the chain transfer agent is added after completing the preparation of the shell polymers to adjust the gel content and the molecular weight. Support for this amendment can be found in the Specification at least on p. 15, lines 5-10.

Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-13 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over U.S. Patent Application Publication No. 2003/105222 (“Choi”) in view of U.S. Patent No. 3,970,629 (“Izaki”). Applicants respectfully traverse this rejection.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, or knowledge generally available in the art at the time of the invention, must provide some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). “A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). To find obviousness, the Examiner must “identify a reason that would have prompted a person of ordinary skill in the art in the relevant field to combine the elements in the way the claimed new invention does.” *Id.*

Claim 1, as amended, claims:

1) the manufacture of a core with multiple shells, which is in the second step among the steps of manufacture of latexes of the present invention is done through polymerization by inputting a new monomer mixture when the conversion ratio of monomers to polymers is 55

to 95%. See the Specification on p. 14, line 7 to p. 15, lines 5-17;

2) After the multiple shell polymerization step is completed, the chain transfer agent alone is added (*emphasis added*) when the conversion ratio of an outermost layer is 60 to 95% to adjust the gel content and molecular weight of the outermost layer of the latex. See Specification, p. 15, lines 5-17.

As to the rejection over Choi in view of Izaki, the Examiner states that Choi teaches a method of making a styrene-butadiene latex for coating paper comprising preparing a styrene-butadiene core, and forming coatings around the core by emulsion polymerization. Choi, [0023], [0027]-[0029]. Choi also teaches that gel content and molecular weight of the latex is adjusted by including a chain transfer agent. Choi, [0049]. Izaki discloses that the chain transfer agent is included to reduce gel content to 60% or less, where “[t]he chain transfer agent may be used alone or in admixture and also added simultaneously or continuously. The agent may be employed as a mixture with each of the monomers. Col. 3, lines 51-60.

Applicants understand this to mean that one chain transfer agent or a mixture of such agents may be used, and that these agents are added “simultaneously”, i.e., at the same time as other components (assuming a single charge or a mixture of all components) or “continuously”, i.e. in a continuous, separate feed. Col.4, lines 4-7. Izaki also discloses that the amount of chain transfer agent is “one of the most important key factors to reduce the gel content of the copolymer” and that “a larger amount of the chain transfer agent may result in a lower gel content.” Col. 4, lines 4-12.

Izaki further states:

“the gel content is also influenced by various other factors such as polymerization temperature, conversion, monomer charge technique and the like, the amount of the chain transfer agent may be decided appropriately in each case by *taking the other factors into consideration*. For instance, the use of about 0.6 to 0.8 part by weight or more of a chain transfer agent (e.g. dodecyl mercaptan) per 100 parts by weight of the total amount of the monomers is proper in case of the polymerization being effected at a temperature of about 50 to 70 °C in a conversion of around 95 to 100%. Further, for instance, the use of about 0.1 to 0.2 part by weight of such chain transfer agent may be appropriate in case of the polymerization being carried out at a temperature of about -5 to 10 °C in a conversion of around 60%. When the temperature is higher, the amount of the chain transfer agent may be

generally increased. When the conversion is lower, the amount of the chain transfer agent may be usually decreased.” Col. 4, lines 13-42.

Thus to summarize the invention as claimed in Claim 1 against the disclosure of Izaki:

The present invention	Izaki
Conversion ratio 55-95% Addition of chain transfer agent 0.1-5.0 parts by weight (together with monomer)	Conversion ratio 60% Addition of chain transfer agent 0.1-0.2 parts by weight
Conversion ratio 60-95% Addition of chain transfer agent <u>alone</u> 0.05-5.0 parts by weight	Conversion ratio 95-100% Addition of chain transfer agent 0.6-0.8 parts by weight

As emphasized in the above table from a comparison of Applicant’s conversion range with that of Izaki, the *amount* (or type) of chain transfer agent added does not linearly correlate to the conversion ratio, and therefore there is no teaching in Izaki that would lead the skilled artisan to expect that conversion could be controlled exclusively by addition of chain transfer agent. Claim 1 does not disclose as essential the control of conversion by the “various other factors” recited in Izaki, but as amended, claims that the method of Claim 1 “consists essentially of” the recited steps, thus excluding these other factors as nonessential, contrary to the teachings of Izaki. Note that the omission of an element and retention of its function is an indicia of unobviousness. *In re Edge*, 359 F.2d 896, 149 USPQ 556 (CCPA 1966).

In addition, Comparative Examples 3 to 6 of the instant Specification (see e.g., Table 4 on p. 25) each demonstrate that when the gel content and molecular weight are adjusted during the manufacture of the shells by inputting singly (i.e., by only adding) a chain transfer agent after coating the second shell in the process of coating the triple shells, the ink-drying speed and air permeability show small improvement, and clearly show approximately the same physical properties (and not the clearly superior physical properties as would be expected by the disclosure of Izaki) when compared to those obtained for Comparative Example 2 in which no addition of chain transfer agent alone is made. In contrast, Examples 6-9 wherein the gel content and molecular weight of the outermost layer are adjusted by

inputting singly a chain transfer agent after the manufacture of the last and third shell, improved adhesive force as well as ink-drying speed and air permeability are obtained.

Thus, the point when the chain transfer agent would be added singly (after completing polymerization of multiple shells) is an important factor of the invention claimed in Claim 1. Izaki does not disclose or teach inclusion of the chain transfer agent at the instantly claimed point in the shell polymerization (i.e., after polymerization), and hence fails to teach all elements of the instant claims; and there is no suggestion or incentive that would lead one skilled in the art to modify the combination of Choi and Izaki to include the chain transfer agent after polymerization of the shell polymers, with the expectation that conversion would be controlled. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989) (“Although the Commissioner suggests that [the structure in the primary art reference] could readily be modified to form the [claimed] structure, ‘[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification’”) (citation omitted); *In re Stencel*, 828 F.2d 751, 755, 4 U.S.P.Q.2d 1071, 1073 (Fed. Cir. 1987) (obviousness cannot be established “by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion that the combination be made”). There is no teaching or suggestions to combine elements of the prior art to produce the present invention; Izaki discloses inclusion of chain transfer agent simultaneously or continuously with addition of monomer, but does not disclose either inclusion of the chain transfer agent after forming the shell polymers nor provide a suggestion to do so. Col. 4, lines 4-12. The present invention is thus nonobvious.

Accordingly, even though Izaki discloses the uses of the chain transfer agent to adjust the gel content (albeit in combination with and contingent on other factors such as polymerization temperature, conversion, monomer charge technique and the like), it would not have been obvious to one of ordinary skill in the art at the time the invention was made i) to add monomers and a chain transfer agent onto the core latex when the conversion ratio of monomers to polymers in the first step is at 55 to 95% to polymerize monomers on the core latex through emulsion polymerization; and ii) to add the chain transfer agent *alone* when the conversion ratio of an outermost layer is 60 to 95% *after the multiple shell polymerization step is completed*.

For these reasons at least, there is no suggestion or incentive that would lead one

skilled in the art to combine Choi and Izaki to provide all elements of the instant claim 1, and fails to provide a suggestion or incentive to do so. Reconsideration and withdrawal of the rejections are respectfully requested.

Conclusion

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance are requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

CANTOR COLBURN LLP

By: /James J. Merrick/
James J. Merrick
Registration No. 43,801
Dana A. Gronbeck
Registration No. 55,226
CANTOR COLBURN LLP
20 Church Street, 22nd Floor
Hartford, CT 06103
Telephone (860) 286-2929
Facsimile (860) 286-0115
Customer No.: 23413

Date: June 14, 2010